

State of Illinois
Department of Transportation
Division of Highways
Springfield

SPECIFICATIONS
FOR
BITUMINOUS PREMIX FOR MAINTENANCE USE
INVERTED EMULSIFIED ASPHALT CBAE-2

Serial Number: M48-02

1. DESCRIPTION. The bituminous premix shall be composed of mineral aggregates uniformly coated with inverted emulsified asphalt CBAE-2 plus additive, prepared hot as further described herein, shall exhibit no stripping of the bituminous material from the aggregate when immersed in water immediately after mixing, and shall be capable of being stockpiled over a period of at least six months without hardening. The mixture shall be capable of being loaded into trucks by either hand shovels or power loading equipment, shall be sufficiently workable for placing with shovels, rakes or other hand tools, and shall readily compact by hand tamping, hand or power rolling, or under the action of traffic at the mixing temperature or at temperatures as low as 9 °C (15 °F)., immediately after preparation or over a period of at least six months in a stockpile. The mixture shall remain in place when used to patch wet or dry pavements and shall be stable under normal traffic conditions.

2. MATERIALS. Control of the materials shall be according to the general requirements of Section 106 of the current *Standard Specifications for Road and Bridge Construction*. At the discretion of the Engineer, a twenty-five pound sample of the aggregate (s), a one-quart sample of the bituminous material and a one-pint sample of the additive shall be submitted to the Bureau of Materials and Physical Research, 126 East Ash Street, Springfield, Illinois, for checking the dosage rate and compatibility of the additive with the other ingredient materials.

(a) Aggregate

1. Coarse Aggregate shall consist of crushed stone or crushed gravel, of Class C quality or better, as defined in Article 1004.01 of the *Standard Specifications for Road and Bridge Construction*.
2. Fine Aggregate shall consist of sand, stone sand, or stone screenings of Class B quality or better, as defined in Article 1003.01 of the *Standard Specifications for Road and Bridge Construction*.

(b) Additive

1. When CBAE-2 is used, an anti-stripping additive approved by the Department shall be required. The additive shall be added to the bituminous material at the dosage rate (0.8 to 1.5 percent by weight of total liquid) recommended by the Engineer and shall be thoroughly mixed for at least four (4) hours prior to being incorporated into the mix. A list of approved additives is available on request.

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(c) Bituminous Material

The bituminous material used shall be inverted emulsified asphalt CBAE-2. Inverted emulsified asphalt CBAE-2 shall conform to the following requirements:

Flash Point (Cleveland open cup), °C (°F)	79+ (175+)
Viscosity, Saybolt Furol at 60 °C (140 °F), sec.	100 - 300
Water Content %, by weight	3 - 9
Asphalt Content %, by weight	65 min.
Solvent Content %, by weight	12 - 25
Tests on Distillation Residue	
Penetration at 25 °C (77 °F), 100 g, 5 sec,	120 - 300
Ductility at 25 °C (77 °F), 5 cm/min, cm	100 min.
Soluble in Trichloroethylene, %	98 min.
Miscibility with water	None

3. INSPECTION. The Engineer or his authorized representative shall have access at any time to all parts of the plant in order to verify weights or proportions and character of materials used in the preparation of the mixture. The manufacturer shall afford such facilities as may be required for making inspection at the plant and for collecting and forwarding samples of the bituminous mixture to the Department.

4. PLANT AND EQUIPMENT. Storage facilities and all equipment used in the preparation of the mixture shall be approved by the Department. An-approved drier shall be available for surface drying the aggregate when needed. The materials for individual batches shall be measured accurately either by volume or weight, by approved methods and equipment. A batch type mixer of approved design and capacity shall be used in mixing the ingredient materials. However, approval for the use of a continuous mixer may be given if it can be shown that satisfactory results will be obtained.

5. PREPARATION OF MIXTURES. These mixtures shall be prepared in a hot-mix asphalt plant. The coarse and fine aggregates shall be accurately proportioned to produce mixtures within the specification limits. For safety reasons, the aggregate shall not be heated to higher than 79 °C (175 °F) when CBAE-2 is used. Scalping screens shall be installed to remove oversize materials. The hot aggregate and bituminous material shall be measured accurately by weight or by volume and mixed in the pug mill mixer until homogeneous and all particles of aggregate are coated uniformly. The mixture shall then be dumped and stockpiled.

6. COMPOSITION OF MIXTURES. The ingredients shall be combined to produce mixtures meeting the approval of the Department and conforming to the following composition limits by weight:

	<u>Binder Mixture</u>	<u>Surface Mixture</u>
Gradation of Extracted Aggregate: (100%)		
Passing 3/4 inch sieve, %	100	
Passing 1/2 inch sieve, %	75 - 94	100
Passing 3/8 inch sieve, %	64 - 78	90 - 100
Passing No. 4 sieve, %	32 - 45	65 - 86
Passing No. 8 sieve, %	25 - 38	31 - 54
Passing No. 200 sieve, %	0 - 5.0	0 - 5.0
Residual Bitumen (Includes Additive)	4.0 - 5.0	4.5 - 6.0

It is the responsibility of the producer to produce mixtures conforming to the requirements of these specifications and satisfactory to the Department.

SAFETY NOTE: Inverted emulsified asphalt CBAE-2 is a combustible liquid and should be handled as a hazardous material. All local, city, county, state and federal regulations in handling a hazardous liquid should be followed.

Effective February 1, 2002

This specification supersedes Serial Number M48-79, effective April 1, 1979.

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